

**REMARKS**

Claims 3-5, 7-11, 16-33, 35, and 37-40 are pending. Claims 26, 30, 37 and 40 are amended. Antecedent basis for the amendment to the claims is found in paragraphs [0063], and [0101] through [0103] and in Table II of the specification. A minor amendment in the specification has been made pursuant to the Examiner's request. No new matter has been  
10 introduced.

**Amendment to the Specification**

The Examiner has stated that Applicants' previous amendment to the Table II is acceptable on a content basis, but the appropriate way to amend the table is to provide an  
15 amended table. Pursuant to the Examiner's request, Applicants hereby provide the amended Table II in the specification.

**Responses to Rejections under 35 U.S.C. 112**

Claims 26-27, 30, 37-38, and 40 were rejected under 35 U.S.C. 112, first paragraph, as  
20 failing to comply with the written description requirement. Claims 30 and 40 were further rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement.

In particular, with respect to claims 26 and 37 (and their dependent claims 27 and 38), the Examiner has alleged that the claims "contains subject matter, which was not described in the  
25 specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention." Applicants have amended the claims to recite that the source material is selected from the group

5 consisting of: (1) acetylene; (2) acetylene and N<sub>2</sub>; and (3) acetylene and NF<sub>3</sub>, wherein the substantially uniform weight distribution comprises dominant C<sub>2</sub> species of hydrocarbon ion and non-dominant C<sub>4</sub> species of hydrocarbon ion, and wherein the dominant species of hydrocarbon ion comprises at least about 95% of the ions in the stream when the pressure is maintained not more than about 5 x 10<sup>-5</sup> mbar. Applicants believe the rejection is overcome. Applicants  
10 respectfully request the rejection to claims 26-27 and 37-38 to be withdrawn.

Pursuant to the Examiner's request, claims 26 and 37 have been amended to recite accurate language consistent with the original specification regarding dominant C<sub>2</sub> species of hydrocarbon ion and non-dominant C<sub>4</sub> species of hydrocarbon ion.

With respect to claims 30 and 40, the Examiner has alleged that the range of "a plasmon  
15 peak greater than about 25 eV" "was not found in the original claims, nor is it provided for in table II", and that the claims contain "subject matter, which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention." Claims 30 and 40 have been  
amended to recite that the carbon deposited on the substrate provides a plasmon peak in a range  
20 from about 25.5 eV to about 31.4 eV. The rejections to claims 30 and 40 are overcome, and  
Applicants respectfully request the rejections to be withdrawn.

Response to Rejections under 35 U.S.C. 103(a) in view of Baldwin

Claims 3-5, 16-17, 20, 23-24, 29-30, and 37-38 were rejected under 35 U.S.C. 103(a) as  
25 being unpatentable over U.S. Patent No. 5,616,179 (hereinafter, "Baldwin"). Applicants  
respectfully traverse.

5 In an analysis of obviousness or non-obviousness the law requires that the scope and content of the prior art be determined; that the differences between the prior art and the claims be ascertained; and that the level of ordinary skill in the art be resolved in order to assess what would, or would not be obvious to a person of ordinary skill in the art. *Graham v. John Deere*, 383 U.S. 1, 17-18, 86 S.Ct. 684 (1966); *KSR v. Teleflex*, 127 S.Ct. 1727 (2007).

10 Where a rejection is made under 35 U.S.C. 103(a) on the basis of obviousness, only after *prima facie* grounds of rejection are established does the Applicant(s) bear a burden of rebutting those grounds. The law requires that a three branch test be satisfied to establish a rebuttal *prima facie* ground for rejection. First, all of the features of the claimed invention must be present in the prior art. Second, the proposed modification or combination must hold out a reasonable prospect of success. Third, there must be some reason provided in the rejection to explain why a person of ordinary skill in the art would make the modification or combination. There can be no finding of obviousness where a reference teaches away from the proposed modification or combination, or where the proposed modification or combination would destroy the functionality of the reference for its own purpose. See *Gillette v. S.C. Johnson*, 919 F.2d 20 720, 724 (Fed. Cir. 1990); *In re Geisler* 116 F.3d 1465, 1469 (Fed. Cir. 1997); *In re Gordon*, 733 F.2d 900, 902 (Fed. Cir. 1984).

The Examiner's obviousness rejection should be withdrawn as *prima facie* grounds for the rejection have not been established. In response to Applicants' remarks previously made on December 5, 2007, in which Applicants pointed out that Baldwin teaches away from the features 25 of the claimed substantially uniform impact energy distribution and substantially uniform weight distribution, the Examiner has attempted to interpret the teachings of Baldwin in such a way that is inconsistent with the clear language of the disclosures of Baldwin. As previously stated by

5 Applicants, the Examiner has failed to show that the claimed substantially uniform impact energy distribution and substantially uniform weight distribution are necessarily present in Baldwin, as Baldwin teaches away from these features. Baldwin, in col. 5 ll. 55-56 and col. 6 ll. 3-8, states:

10 [T]he present process using the end-Hall ion source is superior to conventional methods in a number of respects:

15 ...  
**ion energy distribution contains both low energy ions and a high energy component of the beam which gives proper amount of high energy ion bombardment**—this would normally remove the need for a second ion source for argon or other ion bombardment for ion-assisted deposition;...

(emphasis added). The above statements of Baldwin expressly teach that one of distinguishable features of Baldwin from conventional methods is that **ion energy distribution** of Baldwin contains **both low energy ions and high energy component**. Contrary to the clear language 20 and teachings of Baldwin, the Examiner has asserted that the term “low energy ions” therein should be interpreted to mean low energy neutral species as she “found no other recitations with respect to the presence of any low[er] energy ions, but found more detailed description with respect low energy **reactive neutral species**”. However, as the Examiner acknowledged, the terms, ions and neutral species, have entirely different meanings and cannot be used 25 interchangeably. Also, it does not appear that the term “low energy ions” was used mistakenly as no record showing any attempt to correct the term (e.g., Certificate of Correction) is found in Baldwin. Further, Applicants have found no recitations in Baldwin with respect to substantially uniform impact energy distribution and substantially uniform weight distribution.

Moreover, in distinguishing the invention of Baldwin from the prior art, Baldwin 30 discussed the importance of and difference in ion energy distribution. Baldwin, in col. 3 ll. 10-30, states:

5        The present invention requires the use of an end-Hall effect ion source to perform the subject process. No secondary ion source or gas mixtures are necessary to produce a-C:H in the present invention, though they may be used, if desired. The end-Hall source used in the present invention is functionally different than the Okada et al closed-drift source for several important reasons.

10      Firstly, the magnetic field and electric field design principles are different for the two types of source. Generically, the closed-drift source maintains a nearly perpendicular orientation between the magnetic field vector B and the applied electric field vector E, while the end-Hall design places these two vectors parallel except for the controlled divergence of the magnetic field near the exit aperture. **This difference is partially responsible for the different ion energy distribution produced by each source** as can be seen by comparing the published ion energy distributions in the respective papers cited above. Secondly, **there is a difference in ion energy distributions between the Okada et al closed-drift source and the end-Hall used in the present invention...**

(emphases added). The above statements are consistent with the previously-discussed statement of Baldwin, “ion energy distribution contains both low energy ions and a high energy component of the beam which gives proper amount of high energy ion bombardment—this would normally remove the need for a second ion source for argon or other ion bombardment for ion-assisted deposition”. As the above statements suggest, substantially uniform impact energy distribution and substantially uniform weight distribution should not be assumed to be present, especially where the disclosures expressly teach that ion energy distribution contains both low energy ions and a high energy component.

30      For the above reasons, the Examiner is respectfully requested to withdraw the rejection to claims 3-5, 16-17, 20, 23-24, 29-30, and 37-38.

Response to Rejection under 35 U.S.C. 103(a) over Baldwin in view of Rabalais

5       Claims 19, 31-35, and 39-40 were rejected under 35 U.S.C. 103(a) as being unpatentable over Baldwin and further in view of U.S. Patent No. 5,374,318 (“Rabalais”). Applicants respectfully traverse.

10      Claim 19 depends on claim 3, which is allowable for reasons discussed above, and is allowable as depending on an allowable claim and reciting additional novel combinations of claim elements.

15      Claim 31 is also allowable for reasons discussed above with respect to claim 3. Claims 32-33, 35, and 39-40 depend on claim 31 and are allowable as depending on an allowable claim and reciting additional novel combinations of claim elements. Claim 34 was canceled previously.

15

Response to Provisional Rejections under Nonstatutory Obviousness-Type Double Patenting

All pending claims in this application were provisionally rejected on the grounds of nonstatutory obviousness-type double patenting as being unpatentable over claims of Applicants' copending applications.

20      Pursuant to MPEP section 804, where a "provisional" nonstatutory obviousness-type double patenting (ODP) rejection is the only rejection remaining in the earlier filed of the two pending applications, or "provisional" ODP rejections in two applications are the only rejections remaining in those applications, the examiner should withdraw the ODP rejection in the earlier filed application thereby permitting that application to issue without need of a terminal  
25 disclaimer.

As discussed above, all pending claims in this application are allowable, and the provisional nonstatutory obviousness-type double patenting rejections are the only rejections

5 remaining, Applicants respectfully request that the Examiner withdraw the provisional ODP rejections.

**CONCLUSION**

In view of the foregoing, Applicants believe all claims pending, claims 3-5, 7-11, 16-33, 35, and 37-40, are in condition for allowance, and such action is respectfully requested.

10 If the Examiner believes that a telephone or other conference would be of value in expediting the prosecution of the present application, enabling an Examiner's amendment or other meaningful discussion of the case, Applicants invite the Examiner to contact Applicants' representative at (310) 777-8399.

15 Respectfully Submitted,

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By

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